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C-A OPERATIONS PROCEDURES MANUAL

4.6.11 PASS Subsystem Tests: Semi-Annual Acceptance Tests for PEER 7

Text Pages 2 through 6

Attachment(s)

Hand Processed Changes

<u>HPC No.</u>	<u>Date</u>	<u>Page Nos.</u>	<u>Initials</u>
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Approved: _____ **Signature On File** _____
Collider-Accelerator Department Chairman Date

V. Castillo

4.6.11 PASS Subsystem Tests: Semi-Annual Acceptance Tests for PEER 7

1. Purpose

- 1.1 The purpose of these procedures is to test the area of the Collider covered by the Peer 7 (Sector 5/ STAR/ Sector 6) portion of the Particle Accelerator Safety System (PASS) for proper operation.
- 1.2 Components of the system to be tested include gates, crash operators, indicator lights, key switches, card readers, chipmunks, critical devices and the PLC computers.

2. Responsibilities

- 2.1 Members of the Access Controls Group (ACG) shall, as designated:
 - 2.1.1 conduct these test procedures;
 - 2.1.2 complete the test check-off items within the test procedures;
 - 2.1.3 document tests performed, problems found and repairs made in the PASS Maintenance Log Book;
 - 2.1.4 inform the ACG Group Leader of any failures found.
- 2.2 The Access Controls Group Leader shall:
 - 2.2.1 ensure that these procedures are executed at intervals of not greater than six months, or at such times as required by the Radiation Safety Committee (RSC);
 - 2.2.2 review the test results and sign the completed test procedure;
 - 2.2.3 report any as-found unsafe failures to the Assistant to the ESHQ Associate Chair, and the Chairman of the RSC.
- 2.3 The RSC Chairman (or designee) shall:
 - 2.3.1 review the test results and sign the completed test procedures;
 - 2.3.2 determine if and when retesting is required after changes in hardware or software have been implemented.

3. Prerequisites

- 3.1 Before proceeding with these tests, RS LOTO of the RHIC Injection Devices using [C-A-OPM OPM 9.1.16](#) is required!

Caution:

The possibility of beam being admitted into the area under test must be removed by properly securing the appropriate Critical Devices, or else a grave radiation hazard may result!

- 3.1.1 The Test Team Leader or the Access Controls Group Leader, (or qualified designee) shall place an RS LOTO on the following devices located in Bldg. 1000P to ensure that the RHIC Ring is in a safe-off condition:
- The Injection Switching magnet power supply (PSSWM, 1000P)
 - The Injection X Arc magnet power supply (PSXARC, 1000P),
 - The Injection Y Arc magnet power supply (PSYARC, 1000P),
 - or:
 - Other critical devices as specified by the RSC chair (or qualified designee)
- 3.2 Before proceeding with these tests, the following conditions must apply:
- 3.2.1 The development systems for both Division A & Division B must be disconnected and be RS LOTOed.
- 3.2.2 The key switches on both Division A & Division B PLC computers must be in the ARUN position, the keys removed and secured.
- 3.2.3 The PLC enclosures must be closed and locked with a PASS system padlock.
- 3.3 Minimum Personnel
- 3.3.1 A minimum of two members of the Access Controls Group, who will work in the field are required. These members shall be designated an Inspector and an Assistant and their qualifications and training requirements are:
- RWT-002, ARAD Worker 1"
 - C-A Access Training
 - Training in the use of a POM.
- 3.3.2 One member of the Access Controls Group to man the PASS System Operator Interface in the MCR is required. This member shall be designated a Test Team Leader (TTL) and shall be qualified to:

- Operate the Operator Interface in the MCR.
- Set the PASS System in the required operating Mode, and to direct the test effort. Record test results and make entries in the PASS Maintenance Log as required.
- Apply/remove RS LOTO as necessary.

3.4 Equipment required for the Inspector, and Assistant(s):

- 3.4.1 TLD badges
- 3.4.2 PASS access keys as required for testing
- 3.4.3 PASS entry passcards as required for testing.
- 3.4.4 Padlock keys for access to PASS gateboxes.
- 3.4.5 Large screwdriver to open PASS gateboxes.
- 3.4.6 Stopwatch or wristwatch for measuring alarm duration's.
- 3.4.7 Flashlight for inspection of gatebox interiors.

3.5 Posting:

- 3.5.1 Prior to performing this series of tests, post all entrance gates with signs that the area is under test.

3.6 Software download:

- 3.6.1 At the beginning of each test (or series of tests) fresh versions of the most recently baselined software shall be downloaded to each Division PLC.

4. Precautions:

- 4.1 Portions of these procedures may require taking the system to Beam Enabled (No Access, MODE 24). Special precautions may need to be taken; refer to the appropriate OPMs.
- 4.2 When in MODE 24, all non-PASS test personnel must be swept from the area under test as ODH fan protection is not active in this mode.
- 4.3 PASS test personnel remaining in the tunnel when in MODE 24 must wear Personal Oxygen Monitors (POMs).
 - 4.3.1 In the event of an alarm on a POM, or upon hearing a noise that may be due to escaping cryogen, occupants should immediately trip a crash operator, which will cause PASS to leave MODE 24 and will re-enable fan protection.

5. Procedure

5.1 Conduct Acceptance Tests

Note 1:

If at any time either Division A or B equipment does not show the expected results, the test shall be halted and the necessary repairs made. The failure shall be noted on the PASS Trouble Log Tracking Sheet. Details of the problem and repairs made shall be recorded in the PASS Maintenance Log Book and reported to the Access Controls Group Leader. Repairs to wiring or software that could render previous test results invalid shall cause the test procedure to be restarted from the beginning; however mechanical re-alignment of switches, gates etc. shall not necessitate complete retesting following repair.

Note 2:

The Test Team Leader shall check off the items on the Test Procedure form as each step is successfully completed (even if someone else has actually done the step.)

Note 3:

The official execution of the tests which are a part of this OPM (see attachments) shall be made without deviation except by RSC approval.

- 5.1.1 Use only a pen with permanent, non-erasable blue or black ink to fill in the test procedure responses; pencil or other erasable medium is not allowed.
- 5.1.2 Each line in the procedure has a checkoff box associated with it at the left of the line; each box must be checked.
- 5.1.3 The test team leader shall sign off on the lines in the procedures marked Acompletion of initial testing...@subsequent to the initial completion of the test to indicate that the test procedures have been executed, regardless of whether or not there have been anomalies found.
- 5.1.4 Compile all unexpected test results on a PASS Trouble Log Tracking Sheet. If repairs are required, they must also be entered into the PASS Maintenance Log Book (see Note #1 above)
- 5.1.5 The test team leader shall sign off on the lines in the procedures marked Afinal acceptance...@subsequent to repair of anomalies to indicate that all testing has been successfully completed and retested if necessary, and that the test results are ready for review.
- 5.1.6 Following successful completion of testing, the test results shall be reviewed by the Access Controls Group Leader, and the RSC Chair, and/or their designees. Verification of their review and acceptance of the test results shall be signified by their signatures on each procedure cover sheet.

6. Documentation

- 6.1 Test Procedures (Attachments to this OPM). Original to be permanently filed with the ASGL following completion of testing.
- 6.2 PASS Trouble Log Tracking Sheet (as required). Original to be permanently filed with the ASGL following completion of testing.
- 6.3 PASS Maintenance Log Book

7. References

None

8. Attachments

- 8.1 [C-A-OPM-ATT 4.6.11.a, “6 O=Clock \(PEER 7\) Critical Device and Permit Link Tests”](#)
- 8.2 [C-A-OPM-ATT 4.6.11.b, “6 O=Clock \(PEER 7\) Critical Device Reachback Tests”](#)
- 8.3 [C-A-OPM-ATT 4.6.11.c, “6 O=Clock \(PEER 7\) Crash Tests”](#)
- 8.4 [C-A-OPM-ATT 4.6.11 d, “6 O=Clock \(PEER 7\) Sweep Tests”](#)
- 8.5 [C-A-OPM-ATT 4.6.11.e “6 O=Clock \(PEER 7\) Mode 24 Tests”](#)
- 8.6 [C-A-OPM-ATT 4.6.11.f “6 O'Clock \(PEER 7\) Chipmunk Tests”](#)
- 8.7 [C-A-OPM-ATT 4.6.11.g “6 O=Clock \(PEER 7\) Power-Up Tests”](#)